

## OBSERVATIONAL STUDY OF BODY FAT PERCENTAGE WITH THE HELP OF BODY FAT MONITOR IN MEDAVRUDDHI SYMPTOMS QUOTED IN BRIHATRAYS

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### ABSTRACT

Obesity is one among the major diseases of modern era, increasing in prevalence. The World Health Report of W.H.O. listed obesity under the 10 top selected risks to the health. Sthaulya [OBESITY] is well recognized from the Samhita period and is included under eight undesirable Conditions [Astha Nindita], Shleshma Nanatmaja, Samtarpana Nimitaja, Atinindita, Bahu Dosha Janita Vikara. In spite of advanced technology & researches, the modern medicine is failing to give the best due to its multifactorial nature. So patients are continuously looking with a hope towards Ayurveda to overcome this challenge. For this purpose 50 patients were registered. The patients were assessed on different parameters. All clinical signs and symptoms were assessed on the basis of scoring given to them. Duration of clinical trial was of three months.

**KEY WORDS:** Sthaulya, Obesity

### INTRODUCTION

The Nature has taught the man how to be healthy before the science has discovered the laws of health. Obesity is one among the major diseases of modern era. World Health Organization recognizes obesity as the greatest health threat of the twenty-first century. Obesity is widely regarded as a pandemic with potentially disastrous consequences for human health. Obesity is a blessing of the modern age of machines and materialism. It occurs as a result of lack of physical activity with increased intake of food. The industrialization, stress during the work, dietary habits, lack of exercise & various varieties among the daily diet e.g. fast food, frozen fruits, increased amount of soft drinks and beverages, canned foods results into the clinical entity which we can call as obesity.

Many theories have been put forward with many new hypotheses describing the exact aetiopathogenesis of obesity. In various studies, it has been found that android or abdominal obesity has more association with an atherogenic lipid profile, diabetes mellitus and hypertension. In Ayurvedic texts too, central obesity has been targeted from its cardinal sign "*chala- sphika-udara-stanam* (Pendulous movements of buttocks, abdomen and Breast)". Its various clinical features such as *kshudra shwasa* (Breathlessness on Exertion), *kranthana* (Snoring), *sarva- kriya asamartha* (Inability to work), *alapa prana avum maithun Shakti* (Low vitality & Impotence), *javoparodha* (Lassitude), *daurbalya*. (Weakness), *atinidra* (Excessive sleep), *kshudra - pipasa atiyoga* (Excessive Appetite & Thirst) etc. The Fram-

ingham Heart study revealed that there has been marked increase in cardiovascular diseases associated with obesity including HT, Dyslipidemia, CVA, PVD, CAD, MI and Sudden death. The Ayurvedic texts of later age have identified obesity and its complications and have mentioned this disease separately as not just increased adiposity or *atisthaulya* but as '*Medoroga*' or disorders arising due to vitiation of *medadhatu*.

#### AIMS & OBJECTIVES

1. To observe relation between symptoms of *medavruddhi* & body fat percentage.
2. To develop a modern parameter to diagnose symptoms of *medavruddhi*.

#### PLAN OF STUDY

1. Informed consents have been taken.
2. Assessment of *medavruddhi* & *sthaulya* in study subjects is done as per CRF & gradations of *anguli pramana* are done & validated.
3. Body fat percentage, BMI, WHR, Abdominal fold have been measured.
4. Sorting of subjects between *medavruddhi* and *sthaulya* have been done according to the observations.

#### MATERIALS & METHODS

##### MATERIALS –

1. Literature search

A] A review of Ayurvedic literature have been taken regarding the symptoms of

#### 4. Gradation chart for Anguli pramana:

	Std	0	1	2	3
<b>Udar</b>					
<b>Vistaar</b>	12	<12	>14	>16	>18
<b>Aayam</b>	10	<10	>12	>14	>16
<b>Parshva</b>					
<b>Aayam</b>	12	<12	>14	>16	>18
<b>Vistaar</b>	10	<10	>12	>14	>16
<b>Uru</b>					
<b>Aayam</b>	12	<12	>14	>16	>18

*medavruddhi* & *sthaulya* quoted in Brihatrayi. A review of Modern literature have been taken related to body fat percentage & BMI.

2. Sample size- 50 subjects will be selected randomly.

##### Methods –

1. Type of study- Observational study
2. Medium of dissertation – English supplemented with Sanskrit
3. Criteria for selection of patients –
  - A. Inclusion criteria-
    1. Age- 18 to 25 year
    2. Sex- Both male and female
    3. Community-Indian
    4. Socio-economy class-Higher middle class
    5. According to diet-Mixed (veg& non-veg)
    6. Showing symptoms of *medavruddhi* & *sthaulya*
  - B. Exclusion criteria-
    1. Below 18 & above 25 years
    2. Pregnant ladies
    3. Chronic ill patients
    4. People having *prameha purvarupa*, *sthaulya upadrava*, *shleshma vikara*, *rakta vikara*, *mamsa vikara*. Though these diseases are included in *medavruddhi* symptoms quoted in *Ashtang sangraha*, to avoid *ativyapti*, the above said diseases are excluded from the study.

<b>Parinah</b>	30	<30	>32	>34	>36
<b>Sphik</b>					
<b>Utseda</b>	12	<12	>14	>16	>18
<b>Manya</b>					
<b>Utseda</b>	4	<4	>6	>8	>10
<b>Parinah</b>	22	<22	>24	>26	>28

### OBSERVATIONS AND RESULTS

**Table No: 1 Vistar-12 Grade Vs Body Fat Grade (udar)**

Vistar 12	Body Fat						Chi. Value	df
	0 Grade		Obese		Total			
0 Grade	4	100.00%	40	86.96%	44	88.00%		
1 Grade	0	0.00%	3	6.52%	3	6.00%		
2 Grade	0	0.00%	1	2.17%	1	2.00%		
3 Grade	0	0.00%	2	4.35%	2	4.00%		
Total	4	100.00%	46	100.00%	50	100.00%	p value	.898

**Table no: 2 Ayam-10 Grade Vs Body Fat Grade (udar)**

	Body Fat						Chi. Value	df
	0 Grade		Obese		Total			
0 Grade	3	75.00%	2	4.35%	5	10.00%		
1 Grade	1	25.00%	5	10.87%	6	12.00%		
2 Grade	0	0.00%	7	15.22%	7	14.00%		
3 Grade	0	0.00%	32	69.57%	32	64.00%		
Total	4	100.00%	46	100.00%	50	100.00%	pvalue	.000

**Table no: 3 Ayam-12 Grade Vs Body Fat Grade (parshav)**

	Body Fat					
	0 Grade		Obese		Total	
0 Grade	4	100.00%	46	100.00%	50	100.00%
Total	4	100.00%	46	100.00%	50	100.00%

**Table no: 4 Vistar-10 Grade Vs Body Fat Grade (parshav)**

	Body Fat						Chi. Value	df
	0 Grade		Obese		Total			
0 Grade	4	100.00%	39	84.78%	43	86.00%		
1 Grade	0	0.00%	5	10.87%	5	10.00%		
2 Grade	0	0.00%	1	2.17%	1	2.00%		
3 Grade	0	0.00%	1	2.17%	1	2.00%		

**Table no: 5 Ayam-12 Grade Vs Body Fat Grade (uru)**

	Body Fat					

	0 Grade		Obese		Total			
0 Grade	0	0.00%	3	6.52%	3	6.00%		
1 Grade	1	25.00%	8	17.39%	9	18.00%		
2 Grade	3	75.00%	15	32.61%	18	36.00%	Chi. Value	3.955
3 Grade	0	0.00%	20	43.48%	20	40.00%	Df	3
Total	4	100.00%	46	100.00%	50	100.00%	p value	.266

**Table no: 6 Vistar-30 Grade Vs Body Fat Grade (uru)**

	Body Fat							
	0 Grade		Obese		Total			
0 Grade	4	100.00%	41	89.13%	45	90.00%	Chi. Value	0.483
1 Grade	0	0.00%	5	10.87%	5	10.00%	df	1
Total	4	100.00%	46	100.00%	50	100.00%	p value	.487

**Table no: 7 Utsedha-12 Grade Vs Body Fat Grade (sphik)**

	Body Fat							
	0 Grade		Obese		Total			
0 Grade	3	75.00%	20	43.48%	23	46.00%		
1 Grade	1	25.00%	13	28.26%	14	28.00%		
2 Grade	0	0.00%	6	13.04%	6	12.00%	Chi. Value	1.939
3 Grade	0	0.00%	7	15.22%	7	14.00%	df	3
Total	4	100.00%	46	100.00%	50	100.00%	p value	.585

## CONCLUSION

1. Body fat monitor can be used as a parameter to access symptoms of *medavruddhi*.
2. *Medavruddhi* has been accessed by anguli pramana & gradations are done accordingly. These gradations are related with given standard scale of body fat percentage by using body fat monitor. In this way relation between *medavruddhi* & body fat percentage has been established.
3. By review of literature & observational data it has been concluded that symptoms of *medavruddhi* & *sthaulya* are definitely not same.
4. Demarcation line between *medavruddhi* & *sthaulya* is in males & in females has been determined. For males it is 20-35% & for females it is 25-45%.
5. Derived range of body fat percentage in males & in females definitely achieve sound health which prevents *sthaulya* in stage of *medavruddhi* by scheduling proper regimen.

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